

REMARKS

Claims 1-22 are pending in this application. The independent claims in this application are claims 1, 7, 13, 14, 19 (shown below in **bold**).

In the Office Action at paragraph 3, Claims **1-4, 7** and 21-22 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Harif (US 6,820,056) in view of Norris (US 5,280,524).¹

In the Office Action at paragraph 12, Claim **13** has been rejected under 35 U.S.C. 103(a) as being unpatentable over a combination of Dahan, Norris, and Harif.²

In the Office Action at paragraph 17, Claims **14** and **19-20** have been rejected under 35 U.S.C. 103(a) as unpatentable over a combination of three references: Kimura et al., Norris, and Harif.³

Applicant respectfully traverses all of the obviousness rejections.

Applicant is the first to exploit and apply a property of bone conduction microphones that they can be activated at a low level of sound input, to provide new uses as set forth in Applicant's claims for a bone conduction microphone. In the presently claimed invention as set forth in the independent claims, a bone conduction microphone is used; "the input sound may not be of voices"; and, "a head-mounted system comprising the bone conduction microphone is discreetly hidden". (Independent claims 1, 7, 13, 14, 19.)⁴

Applicant provides a novel "method for inputting an instruction to operate

¹In the Office Action at paragraph 7, Claims 6 and 9-12 have been rejected under 35 U.S.C. 103(a) over a combination of three references: Harif, Norris, and Tognazzini (US 5,790,974). In the Office Action at paragraph 24, Claims 5 and 8 have been rejected under 35 U.S.C. 103(a) over a combination of three references: Harif, Norris and Oh.

²In the Office Action at paragraph 14, Claims 15 and 17 have been rejected under 35 U.S.C. 103(a) as being unpatentable over a combination of four references: Dahan, Norris, Harif, and Tognazzini.

³In the Office Action at paragraph 21, Claims 16 and 18 have been rejected under 35 U.S.C. 103(a) as being unpatentable over a combination of four references: Kimura, Norris, Harif, and Tognazzini.

⁴Examples of discrete hiding are hiding in side the user's ear and hiding in the user's hair. (Claims 21-22.)

a computer”. (Claim 1.) The Examiner has cited no primary reference in which a computer is operated by using a bone conduction microphone.

Three primary references have been cited: Harif; Dahan; and Kimura, none of which discloses a bone conduction microphone. None of the primary references teach or disclose the new uses for a bone conduction microphone provided by Applicant’s invention. Applicant’s inventive surreptitious methods are now possible, a Applicant has uniquely recognized, because of the capabilities of bone conduction microphones.

In all the art rejections, the Examiner incorrectly treats air microphone technology and bone conduction technology as easily combined or inter-substituted. A person of ordinary skill in Applicant’s art would not combine the air microphone references (Harif, Dahan, Kimura, Oh, Tognazzini) and the bone conduction reference (Norris) in the manner that the Examiner proposes. Air microphone technology and bone conduction technology differ substantially. The person of ordinary skill in the art would recognize that trying to use bone conduction technology would introduce serious practical problems in most applications for traditional microphones, for at least the reason that bone conduction requires the bone of the user in physical contact with the microphone. This requirement of bone conduction microphones makes them largely unsuitable for substitution into most uses of traditional air microphones. A person of ordinary skill in the art would consider that bone conduction microphones are for specialty applications (such as law enforcement and military applications) where the bother of the physically-contacting bone conduction microphone is justified by the need for the high-sensitivity. The person of ordinary skill in the art contemplating the primary references specifically would consider bone conduction microphones unnecessary (and unsuitable and undesirable) for use in those applications.

Harif

Harif fails to disclose a bone conduction microphone. Harif fails to disclose excluding voice sounds. Harif also fails to disclose surreptitious, discrete

placement of a head-mounted microphone.⁵ Harif uses non-speech sound together with speech sounds in the context of voice recognition, where voice sounds are converted into displayed text and non-voice sounds are used as commands but not converted into displayed text. Harif's "invention is directed towards simplifying command recognition from speech term recognition in speech recognition technology." (Col. 2, lines 29-31.) The Examiner's proposal to modify Harif to use a bone conduction microphone would defeat Harif's purpose of simplifying a speech recognition system and instead would complicate the system for the user. In Harif's system, a normal microphone works and a person of ordinary skill in the art would see no need for bone conduction technology and the attendant complications of physically placing a microphone onto or in the user.

Additionally, the rejections based on Harif are based on the Examiner's impermissible assumption of modifying Harif to entirely exclude the use of voice sounds, which is an impermissible assumption because that would destroy the fundamental purpose of Harif, of converting voice text spoken by a user into displayed text.

Dahan

Dahan fails to teach using a bone conduction microphone. Dahan is a speech-recognition system based on frequently occurring word sequences. Voice-activated dialing, credit card number identification and obtaining flight information are Dahan's examples of using his invention. In Dahan, a normal telephone is used. Dahan's invention concerns how the input sound sent via a normal telephone is processed and matched. Dahan fails to disclose prohibiting a normal voice sound as an input and affirmatively uses a normal voice. Dahan also fails to disclose surreptitious, discrete placement of a head-mounted microphone.

A person of ordinary skill in the art would reject using a bone conduction microphone in Dahan as infeasible, because Dahan's system depends on a person

⁵The Examiner admits (page 3 of the final office action) that "Harif fails to specifically disclose the step of inputting an input sound through the bone conduction microphone, wherein the input sound may not be voices, wherein the bone conduction microphone has picked up the sound produced in the oral cavity of the user, and a head-mounted system comprising the bone conduction microphone is discreetly hidden." (Final office action, page 3.)

normally talking into one of the many normal telephones in public and private use. A bone conduction microphone must be physically on, or in, the user in order to be in contact with bone vibrations. How this could be accomplished in Dahan in a sensible, working manner is neither proposed by the Examiner nor apparent. Objectively speaking, the references fail to take a person of ordinary skill in the art in the direction of using bone conduction technology in Dahan.

Also, Dahan is based on a user's normally speaking into a telephone which is still very much removed from Applicant's invention in which the user is separated from the telephone and cannot use normal speech.

Kimura

Kimura relies on voice-operation which may be normal speech to run remote control systems. Kimura fails to disclose surreptitious, discrete placement of a head-mounted microphone. Kimura relates to remotely controlling various electronic devices, such as audio visual devices. (Col. 1, lines 5-9.) Kimura sets out "to provide a voice-operated remote control system which has an increased speech recognition rate even if voice sound features of the operator vary with time." (Col. 1, lines 55-58.) Kimura is concerned with operating stereos and televisions remotely. A person of ordinary skill in Applicant's art would find it objectively unreasonable to try to use a specialty bone conduction microphone in Kimura, because a bone conduction microphone must be physically placed on the user in order to be in contact with vibrations via bone, and this would be considered an unnecessary complicating and annoying feature for a user of a stereo or television in Kimura.

All of the primary references lack the disclosure of a bone-conduction microphone and are intended to be normally operated at sound levels at which traditional air microphones are perfectly suitable. Objectively speaking, a person of ordinary skill in the art reading these three primary references would fail to see a need to resort to a high-sensitivity, specialty microphone (a bone conduction microphone) which would seriously complicate the system and introduce the requirement of physical insertion onto or into the user. The Examiner's theory of why a person of ordinary skill in the art would be motivated to modify the primary references to use a bone conduction microphone is incorrect for being contrary to how the person of ordinary skill in the art would actually think. For each of the

three primary references, a person of ordinary skill in Applicant's art would find it over-complicating or unreasonable to try to use a bone conduction microphone, therefore he would not be motivated to do so. From the perspective of a person of ordinary skill in Applicant's art, it would be unreasonable to combine the primary references (using traditional air microphones in various ways) with bone conduction technology because such combinations would unnecessarily complicate matters, defeat the purpose to which the primary reference was addressed, and/or simply fail to work appropriately in that application.

Even with all the cited references, a person of ordinary skill in the art clearly falls short of Applicant's invention. Applicant is the first one to conceive of the novel use of bone conduction microphones set forth in Applicant's claims. None of the cited references, alone or in any combination, teaches or suggests Applicant's novel uses of a bone conduction microphone.

The secondary references do not supply what is missing from the primary references. As secondary references, the Examiner has cited Norris; Tognazzini⁶; and Oh et al.⁷, of which only Norris teaches a bone conduction microphone. However, Norris fails to teach Applicant's novel uses of a bone conduction microphone. Norris fails to teach surreptitious, discrete placement and surreptitious, discrete, remote computer operation. Such an advantageous new use to which a bone conduction microphone may be put was undiscovered before Applicant invented this new use.

⁶ Tognazzini fails to teach a bone conduction microphone. Tognazzini merely provides a system of identifying calendar schedule conflicts. Tognazzini fails to disclose prohibiting a normal voice sound as an input. Tognazzini also fails to disclose surreptitious, discrete placement of a head-mounted microphone enabling surreptitious, discrete remote computer activation.

⁷The Oh et al. patent fails to teach or disclose using a bone conduction microphone. The Oh patent has as its main objective a hands-free audio memo system, with the emphasis being on a hands-free feature, such as for use while driving an automobile. Oh et al. rely on voice input at a sufficiently loud level to be picked up by a normal microphone. Oh et al. fail to disclose a user operating a computer surreptitiously, without using recognizable sound apparent to others in the vicinity. Oh et al. necessarily assumes that the sound emanated by the user is loud enough and recognizable enough to be input via a normal microphone at a distance from the speaker. In Oh et al., it is impossible for a user to surreptitiously and discretely activate a computer, because the user must speak loudly enough to activate the microphone at a distance from him.

Also Norris fails to teach using non-voice sound input. Norris relies on voice commands. (Col. 8, line 14+.) Norris was providing an ear-mounted microphone “capable of isolating the voice of the speaker from all extraneous, background noise.” (Col. 3, lines 8-11.) Also, Norris was concerned with doing so while avoiding placement of a physical structure within the ear canal. (Col. 3, lines 11-15.) Norris was concerned with establishing a hands-free system without background noise problems so that a user may be mobile and may operate the system hands free so as to be able to simultaneously do other tasks and communicate with multiple parties. (Col. 8, lines 14-54.)

From the six references cited in the office action, a person of ordinary skill in Applicant’s art would still fail to arrive at Applicant’s presently claimed invention in which Applicant has invented new uses for a bone conduction microphone. There is lacking in the art any disclosure of surreptitiously head-mounting a bone conduction microphone system for computer operation based on only non-voice sound recognition input via the bone conduction microphone. Discretely using a head-mounted bone conduction microphone for computer operation based on non-voice sound recognition is an invention by Applicant.

The reasons mentioned herein apply to all of the pending claims. For simplicity and brevity, additional arguments particular to certain dependent claims are not set forth at this time. For the reasons more fully set forth above, reconsideration and withdrawal of the obviousness rejections are respectfully requested.

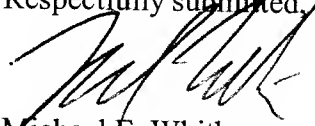
In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1-22 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephone or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any

fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041 (Whitham, Curtis, Christofferson & Cook, P.C.)

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Michael E. Whitham', is written over the closing text.

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